

Research Article

Environment for nursing scholarship and journal impact factors in Taiwan

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Universities are seeking objective measures to assess their faculty members' research output in order to improve their national and international standing. Despite concerns, many have adopted the impact factor of journals for this purpose. The objective of this study was to explore the conditions that have been created within Taiwan as a result of such national and institutional policies. A case study design was used. Information was sought from five senior faculty members, who responded to a questionnaire with items derived from the literature. A key participant provided context within the country. The data were summarized and described. The respondents confirmed the presence of governmental and university policies for publication in high-impact factor journals; they saw some positive aspects, yet described the obstacles faced by many scholars, felt that the policies led to competition rather than cooperation, and viewed national, compared to international, publications in opposing terms. The findings are discussed within the context of current nursing literature. It is recommended that, where impact factors are used, they not be the only quality measure. A larger and more representative study is also recommended.

Key words

environment, for nursing scholarship, impact factor, Taiwan.

INTRODUCTION

Many higher education institutions around the world are seeking to improve their offerings, their research, and their national and international standing. This has led to competition and a search for objective measures to assess quality, especially as it relates to the output of the faculties. The development of bibliometric measures, such as the impact factor (IF), intended as a measure of a journal's impact, and citation analysis, which is the number of times that a scientific article is cited by others (Meho, 2007), has spurred interest; these measures now are being used for a variety of purposes.

More countries now require that their university faculties publish in high-IF journals and they have developed various reward systems, such as cash bonuses, to further spur their faculties in this regard. They also are using various bibliometric measures in faculty hiring and promotion decisions (Monastersky, 2005). Despite expressed caution about the unintended uses of such measures, institutions are using them for making decisions about individual faculty members, such as in hiring and promotion, and for institutional rankings, for determination of the amount of research funding to individuals, departments, or institutions, and for national priority

setting (Campanario *et al.*, 2006). Some authors have decried this tendency on various grounds (Yen, 2004; Monastersky, 2005).

An important concern in the health professions has been that the peer-review process does not take into account the social utility of published papers, while for the professions that practise and provide services to the public, social relevance is a major concern (Freshwater, 2006). Another important concern about the misuse of the IF is that it is being used as a measure of the quality of individual articles or of a scholar's body of work. Holden *et al.* (2006) investigated the predictive validity of IF scores in the hiring and promotion decisions of social work faculty and found a low effect, concluding that their findings would not justify using the IF in making decisions about individuals in hiring and promotion.

Another team of authors investigated the relationship between the quality elements of articles and the frequency of citation of the articles in four psychiatric journals with IFs ranging from 11.2 to 0.88 in 2004, covering a 9 year period (Nieminen *et al.*, 2006). The quality features, including statistical errors, reporting of sample size, poorly reported research questions, and the primary outcome of the study, did not relate to the citation counts. However, some of these same quality features were related to the visibility and prestige of the journal (in this case, represented by two of the four journals with high IFs). The authors concluded that the latter findings were related to detailed author guidelines and rigorous peer review, which are characteristic of high-IF journals.

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Received 25 September 2009; accepted 21 January 2010.

Starting in the 1990s, some institutions in Taiwan adopted the practice of using the number of articles published in the journals listed in various databases of the Institute for Scientific Information (ISI) as an indicator to assess researchers' performance and to guide faculty recruitment and promotion. Specifically, these databases were the *Science Citation Index* (SCI), the *Social Science Citation Index* (SSCI), and the *Arts and Humanities Citation Index* (A&HCI). The inclusion of a journal in one or more of these databases means that it has an assigned IF or has been listed and is awaiting its first IF. Subsequently, the journal's IF and number of citations of an author's article were further used as quality indicators of published articles. In 2003, the Ministry of Education in Taiwan announced a national ranking of colleges' and universities' research performance, based on the number of SCI, SSCI, and A&HCI articles published by their faculties. This announcement provoked heated discussion and debate on issues of research assessment among scholars (Huang & Chang, 2004). The pros and cons of using bibliometric methods for research assessment were discussed. Some scholars argued that bibliometric methods are objective and economic ways to assess research productivity; others argued that, if used, such measures should be treated as only one indicator to supplement peer review, along with other methods (Huang & Chang, 2006; Wu, 2006). Scholars argued points familiar in the literature: that ISI databases included only articles and favored English-language journals, that the research topics chosen by scholars often focus on local or regional issues that might not be of interest to editors of international journals (Chu, 2005; Lai, 2005), and that researchers might pursue bibliometric numbers rather than focusing on the originality, innovation, and usefulness of the study as their goal and that such a policy is harmful to the healthy progress of knowledge development (Wu, 2006; Liu, 2008). Despite wide disagreement and concern, the policies were formally adopted in Taiwan. Of special concern is the way in which the research funding agency of the government uses the bibliometric measures (journal IF and article citation counts) in its funding decisions. These policies equally affect researchers in nursing, social science, and humanities disciplines, all of whom share similar concerns to those presented here.

No studies in nursing could be located on how the implementation of such policies could affect, directly or indirectly, the development of nursing science by creating environments within which scientific development can flourish or might be hindered. Although other disciplines have addressed related issues, one study appears to have the closest relevance to the issues of concern in this study: Judge *et al.* (2007) investigated the question of what makes an article citable – the article, author, or journal? They focused on the discipline of management. The study is complex, but it is worth noting the findings that “the single best predictor of citation is publication in a journal with a high average citation rate” and the “subjective journal prestige” (Judge *et al.*, 2007: 500). In a number of commentaries to the above study, the one provided by Leung (2007) provides an East-Asian perspective, reflecting on the state of management science in East Asia as a result of the “glory and tyranny” of citation impact (Leung, 2007).

The objective of this study was to explore the conditions that have been created within Taiwan as a result of national and institutional policies requiring faculty members to publish in high-IF journals and the extent to which these policies have facilitated or hindered the development of nursing science. The specific issues to be explored are reflected in the questions posed to the respondents in Appendix I. The research reported here is part of a five-country study.

METHODS

Design

The design is a case study of Taiwan, with the unit of analysis being the country. According to Woods and Catanzaro (1988: 156), case studies are “naturalistic studies” that are “not controlled by the investigator” and in which “design is determined by the question posed”. The country was selected on the basis of what was “known” about its national and institutional policies. Taiwan has policies requiring publication by faculty members in high-IF journals.

Selection of institutions and participants

A key participant was identified to provide country-specific information regarding institutional rankings and to assist in identifying the study's participants. The key participant was a senior academic, holding the rank of professor in a major university, who had been active in professional associations over many years and had overall familiarity with the nursing programs and nurse academics in the country.

Taiwan has 10 nursing doctoral programs. Five of these are under the auspices of medical schools and all but one began their doctoral program in the past 10 years. The five doctoral programs that are offered by schools of nursing were chosen. In addition, one doctoral program under medical school auspices was chosen, which has been offering its program for the past 3 years. All six are research universities that require their faculties to engage in research and demonstrate scholarly productivity. One individual from each of these six doctoral programs was invited to participate; they were identified by the key participant, who suggested the names of colleagues. These individuals held the rank of professor or associate professor and, because of their senior rank, were familiar with their respective institution's policies and the state of nursing science in Taiwan, had taught in their doctoral programs, and had scholarly publications. They were thought to be in the best position to provide the needed information to address the issues being explored in this study. When two individuals did not respond to the initial invitation, alternate individuals were sought. Subsequently, from those who agreed to participate, one did not provide completed information. This process yielded a total of five responses.

Given the geographical diversity of the respondents, the most realistic method for collecting the data was through a questionnaire. The individual respondents were viewed as representing the perspective of the country, as the information sought was not about themselves but about the policies

of the country, their institutions, and their views regarding such policies and the impact these might have on the scholarly community in nursing. Given these considerations, five respondents from Taiwan were deemed to be a sufficient number.

Procedures

Approval was obtained from the University of Michigan Health Sciences Institutional Review Board (IRB), USA. As a result of the low risk posed by the study, the IRB did not require signed consent forms, but did require that a letter with the elements of informed consent be provided to the participants *for information only*. Then, the identified individuals were invited to participate by the investigator through an invitation letter, providing relevant information on the study, and the approved consent form for information (no signature). Several reminder letters were sent; within 8 weeks, five responses were received. All communication occurred electronically.

Study instrument

A questionnaire was developed for data collection to ensure that the respondents provided information on a consistent set of issues. The questionnaire sought to understand the extent and purposes for which systems and institutions in Taiwan make use of the IF of the journals in which their faculties publish and sought to explore the issues that are the focus of this study.

The questionnaire development was guided by the literature in generating the questions. A draft was reviewed by four experienced researchers in order to assess the clarity and relevance of the items to the study objective and the issues to be explored and revisions were made accordingly; thus, the questionnaire has content validity. Eight of the questions presented a list of statements as options, five questions required yes/no responses to be checked, and three questions required narrative answers, leading to a total of 16 questions. Appendix I provides a list of questions in the questionnaire.

Data analysis

The responses to the questions that provide options were summarized in table form. The comments and narrative responses were summarized and presented descriptively. In addition, the key participant was critical in providing the background and context regarding Taiwan and in providing an interpretation of the statements from the respondents, which could be understood only by having knowledge of the context, setting, and country. This approach is in line with the literature on the nature of case studies, where the data can be obtained legitimately from multiple sources (Woods & Catanzaro, 1988).

RESULTS

The results are provided first as a description of the context of the country in terms of higher education, nursing, and the

respondents' perceptions of ways in which policies operate; this is followed by a summary of the questions in which the respondents chose the provided options.

The respondents confirmed that journal IFs are used by the Ministry of Education (MoE), university administrators, the school of nursing, and faculty committees concerned with recruitment and promotion. The MoE accredits and ranks universities and compares the research productivity of all universities in the country. A scoring system is used in which research productivity and publication venues are scored. This score counts as 20% of a university's performance, which then determines the amount of funding that is awarded to the university. The schools and/or departments are heavily dependent on this funding.

Some respondents felt that the use of the IF should be accepted as an objective measure, but they still had reservations and concerns. The majority was critical of the policy requiring publication in high-IF journals and the heavy weighting given to this in institutional ranking and research funding. They further provided additional objections, examples of which are: that such publication does not mean quality; that only English publications are considered; that such publications could jeopardize the nature of nursing science; and that some faculty members compromise on teaching to be able to produce publications. Some individuals also mentioned the artificial ways that are used by some journals to increase their IF as the basis for their criticism.

Four respondents agreed with an initiative under way, supported by the International Academy of Nursing Editors, to increase the number of journals in the *Web of Science* (WoS).

Table 1 provides a summary of the options that were chosen for the questions where options were given; we briefly describe the highlights from the table, focusing only on the areas of majority agreement.

Who uses the impact factor and for what purpose?

As shown in Table 1, questions 1 and 2, there was near-unanimity in that all listed parties used the IF and for all the five purposes that were provided as options in the questionnaire.

How scholars' behavior is influenced by the existing policy

As shown in Table 1, question 3, the respondents were almost unanimous in their view that the policy creates competition among scholars and gets in the way of cooperation; furthermore, it means that scholars publish in the journals of other countries rather than in the journals of their own country.

Perceived hurdles

As shown in Table 1, question 4, among the hurdles that the respondents mentioned were: a lack of English-language skills, those who had studied overseas are at an advantage,

Table 1. Summary of responses to selected items ($n = 5$)

Questions and options	Frequency
1. Who uses IF	
University administrators	5
School of nursing/department of nursing	4
Government agency	5
Faculty committees	5
2. Purpose for which IF is used	
As a measure of an individual's productivity	5
As a measure of a group's productivity	5
As a measure of school/department quality	5
To assure a high ranking of the institution in national and international surveys	5
As a measure of journal quality	4
3. How nurse scholars behave as a result of policy requiring publication in high-IF journals	
Scholars compete rather than cooperate	4
Scholars publish in journals of other countries	5
They want to publish in high-quality journals regardless of the IF	0
4. Hurdles encountered in publishing in top-tier journals	
Insufficient language skills	5
Not familiar with top-tier journals or their guidelines	2
Topics of interest to researchers do not interest such journals	4
Those with graduate degrees from overseas are at an advantage	5
5. Compare/contrast those who publish locally compared to those who publish internationally	
Locally published authors are studying important problems in their country	3
Those who publish internationally add prestige to their institution and country	4
The country cannot benefit from international publications	1
Publishing internationally means a focus on health problems of interest to those journals rather than one's own country	2
6. Positive aspects of policy to publish in high-IF journals has meant that:	
There is greater methodological rigor in research in one's country	2
There is stronger theoretical grounding in published papers	3
Graduate-level training in research has improved in the country	2
7. How do you characterize current published works in your country?	
They are trail-blazing efforts in theory or methodology	2
They are responsive to the health needs of the country	3
They are of interest to investigators but not of value to the population	2
They frame practical applications of research for health problems of the country	2
They frame the practical applications of research to the health problems of other regions	3
They represent a replication of work done elsewhere for their relevance to local needs	3
8. Efforts to internationalize journals	
International members are added to journal editorial boards or as assistant/associate editors	1
International members are added as manuscript reviewers	3
Researchers from one's country serve on the editorial boards of journals in other countries	5
Researchers from one's country serve as reviewers for journals in other countries	5
Any of the above steps have strengthened the quality of the journals in one's country	1

IF, impact factor.

and the topics that interest many scholars are not of interest to top-tier journals.

Publishing nationally compared to internationally

As shown in Table 1, question 5, the respondents conveyed varying perspectives on publishing in local national journals, compared to international journals, as follows: those who publish internationally believe they add prestige to their institution and country and those who publish locally believe they address important domestic health problems.

Positive aspects of policy

As shown in Table 1, question 6, the only item (chosen by a slim majority) was the presence of a stronger theoretical grounding in published papers.

Characterization of published works in nursing

As shown in Table 1, question 7, in characterizing the published works, a consensus was not evident as the respondents provided a variety of responses. A slim majority indicated that the publications are responsive to the health needs of the

country, involve replications of work done elsewhere to determine the relevance to local needs, and frame the practical applications of the work in terms of the health problems of interest in other regions of the world.

The literature describes a tension between choosing a topic that has a high likelihood of being published in a high-IF journal and choosing a topic that will be useful to the local population. The respondents were queried regarding this issue in a related question. Three respondents agreed that such a phenomenon exists, providing the example of discharge planning work that is important in Taiwan but is outdated in the USA, while two respondents did not agree that the tension described operates in Taiwan.

Efforts to internationalize Taiwanese journals

As shown in Table 1, question 8, the respondents indicated that they and others have accepted positions as editorial board members, assistant/associate editors, or reviewers for international journals, while fewer indicated that international members have been appointed to journal manuscript review panels for journals in Taiwan.

DISCUSSION

The respondents seemed to be clear on the policies for publishing in high-IF journals and the purposes for which the policies are used, yet they demonstrated considerable disagreements with aspects of these policies. They seemed to be concerned that the policies are used in an indiscriminate manner, without specific and thoughtful judgments, which creates disadvantages for individuals and leads to tensions in faculty teaching and research roles, perhaps implying that individuals might have career preferences other than research and publishing. They further seemed to understand that using publication in high-IF journals to evaluate individuals – whether for promotions or initial appointments – might be a misuse of the original intent of the IF.

Four individuals stated that the topics of interest to researchers in Taiwan are not of interest to top-tier journals. This is a matter of concern and requires further investigation to determine the nature of this perceived problem, especially in view of equivocal responses to the question on the state of nursing science in the country (question 7, Table 1). If these statements reflect the general state of affairs, then it would be puzzling as to why the scope of publications in international journals is not broader than the respondents seemed to indicate.

All research, by its nature, has to deal with a specific problem. It is possible to discuss the implications of a locally significant research study from a global perspective. Areas of globalization include diseases, whereby infectious diseases travel almost instantaneously across the globe, affecting millions. This was dramatically illustrated by the severe acute respiratory syndrome epidemic, as well as by the number of infectious diseases making a comeback in developed countries. Conversely, there are chronic diseases, which developed countries have long dealt with, that are appearing now in many developing countries, along with endemic infectious

diseases. Thus, it might be no longer valid to argue that some health problems, on their own merit, would not be of interest to other countries. Perhaps, the emphasis needs to be on the quality of the research and its presentation and whether or not the authors help the readers to see the relevance of their work to other settings. These matters require further study to better understand the dynamics involved and should include the quality and other features of the work as important variables in publication decisions.

In a recent study of international differences in nursing research for the years 2005–2006, Polit and Beck (2009) extracted various characteristics of published papers from eight nursing journals (five from the USA, three from the UK), most of which consider themselves to be international journals. Fifteen countries were represented in their sample of articles, according to the country of the first author's institution. Taiwan was found to have the fourth-highest number of studies in these Western journals, 79 in total, 82.3% of which were quantitative in design (again, comprising the fourth-highest number among the 15 countries). Furthermore, 24.1% of the total number of the studies from Taiwan involved intervention research (the highest percentage of the 15 countries) and 17.7% of the total were methodological in nature, dealing with measurement. These data suggest a strong cadre of researchers in Taiwan who are conscious of the need to publish in international publications.

Leong and Leung (2004) analyzed three responses by Asian researchers in the management field: the “adopted Western” approach, which entails accepting the pressure to publish in high-IF journals and publishing in them; the “Asian” approach, focusing on domestic problems and publishing in local national journals; and the “integrationist” approach, focusing on local issues and publishing in international journals. The current research does not answer the question of which one of these approaches has been adopted by scholars in Taiwan, but their strong showing in the study by Polit and Beck (2009) might suggest that the adopted Western and integrationist approaches might be favored by the Taiwanese authors in the above study.

A major issue that was raised by the participants was the bias in favor of English-language publications, which disadvantages them. The ISI contains Chinese-language journals and nursing has an opportunity to be listed as well. An analysis of the language issue and the reasons for the overall low IFs of nursing journals is beyond the scope of this article. Some authors have suggested alternative systems for journal and article quality assessment that take into account the impact that a work has had in real life (Freshwater, 2006; Smith, 2008); in the case of nursing, this would be the extent to which scholarly works contribute to patient care or policy. Smith (2008) has mentioned SCImago as an example of a new journal-ranking system that is more nuanced.

Another factor to consider is that many practising nurses do not read nursing research and scientifically written papers and, even if they did, it is not clear that they would be in a position to analyze them and to determine which findings to apply to practice and how to apply them. This schism between practice and research is not unique to nursing. It has been shown, for example, that researchers read and cite the work

of other researchers (Smith & Hazelton, 2008), communicating only with one another. The trend toward evidence-based practice and translational research can make research more meaningful and accessible to the providers of patient care.

The number of nursing journals that are included in the WoS has been increasing; yet, at present, the IF scores of the three highest-ranked nursing journals are 2.9, 2.3, and 2.2, while many are < 1, which are considerably lower than those of many other disciplines. Smith and Hazelton (2008) have “mapped” the nursing literature, providing a history of bibliometric measures, and attempted to analyze the factors that influence citations and IFs.

In the face of the strong emphasis on high IFs, nurse scientists face the dilemma of whether to publish in the journals of other disciplines with higher IFs or to publish in nursing journals with lower IFs. In the first instance, although individuals could be better rewarded as their work is visible and more often cited, it amounts to a “brain drain” from nursing (Smith & Hazelton, 2008) if the profession’s accomplished members migrate elsewhere in search of prestige. In the second instance, by publishing within nursing, individuals contribute to its science and nursing’s professionalization, but they risk lower visibility for their works. In this regard, the importance of having experienced researchers mentoring the next generation of scientists and leaders has been emphasized; Smith and Hazelton (2008) refer to this as building a “culture of consumerism” in nursing. Thus, an exclusive focus on the pursuit of the IF and similar indicators can be shortsighted for nursing and needs to be balanced with the importance of sustaining a viable and dynamic nursing literature via its journals for the development of the discipline. As noted by McKenna (2005), judgments of quality are multidimensional and include: (i) research outputs through various media; (ii) research environments, with the indicators of funding, infrastructure, staffing, and research strategy; and (iii) esteem, with the indicators of impact on policy and practice and various forms of honor and recognition.

Limitations

There are three limitations of this study:

- 1 The questionnaire has content validity only and was in English. The use of English might have caused comprehension difficulties for some participants.
- 2 The case study design poses another limitation, in that the information was obtained from five individuals only, even though they were well informed; thus, the data do not provide the basis for generalizations. Nevertheless, these findings indicate current trends and views; the authors hope they will stimulate reflections and additional research on the topic.
- 3 Despite increasing popularity in the use of the IF, nursing needs to recognize its limitations, in terms of quality assessment, and consider more valid approaches to the measurement of quality.

CONCLUSION

A direct relationship between nursing science and the implementation of the policies that are in place in Taiwan regard-

ing publishing in high-IF journals cannot be inferred at this time. Despite expressions of discontent and hurdles, it appears that there is a general acceptance of the current reality by many active scholars who are producing high-quality research and successfully publishing in international publications, as noted in the study by Polit and Beck (2009). However, the respondents did not characterize their nursing science very favorably. An in-depth study is recommended in order to examine the nature and content of the international publications of Taiwanese researchers, in comparison with their national publications, to better understand the relationship between the current policies and the extent to which nursing science and scholarship are advancing in this country and the extent to which the research produced is useful in addressing the health needs of the population.

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APPENDIX I

Summary of items in the questionnaire

Note: Questions 1–8 correspond to the items in Table 1.

1. Who uses the impact factor (IF) policy?
2. Purposes for which the IF is used.
3. How do nurse scholars behave as a result of policies to publish in high-IF journals?
4. What are the hurdles nurse scholars encounter in publishing in top-tier, internationally recognized journals?
5. How do scholars who publish in local/national journals perceive their contributions compared to those who publish internationally?
6. What are the positives, if any, of policies to publish in high-IF journals?
7. How would you characterize the current published works in your country?
8. To what extent have there been efforts in your country to internationalize nursing journals? Check those that apply.
9. Is there an IF policy in use in your country and institution?
10. Do you or your colleagues agree with the use of the IF?
11. What do you see as the disadvantages in the use of the IF from the standpoint of individual faculty members, nursing school/department, or the nursing profession?
12. To what extent are university rankings and ratings in your country dependent on the research productivity of the collective faculty?
13. Are there top-tier journals that universities compile in nursing in which the nursing faculty members are urged to publish?
14. High-IF journals have been criticized in the literature on various grounds. In your view, to what extent is this the case for high-IF journals in nursing?
15. How many nursing journals published in your country are listed in the *Web of Science*?
16. Do you agree with efforts underway by the International Academy of Nursing Editors to increase nursing journals in the *Web of Science*?